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TITLE: Method for coupling an optical fibre to an optical waveguide and micromechanical coupling device obtained therefrom.

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ABSTRACT:

The invention also relates to a micromechanical device for coupling at least one optical fibre 8 to an integrated optical waveguide 6, the optical waveguide being integrated into a first substrate 2 and the optical fibre being arranged on a second substrate 3 in a "V"-shaped groove 7 parallel to the longitudinal axis X-X of the second substrate. The first substrate comprises male-type first positioning means 4 which include at least one face perpendicular to the

plane of the first substrate, and the second substrate comprises female-type second positioning means 5, the first positioning means being arranged facing the second positioning means.

According to the invention, the second substrate 3 is cut from a silicon single crystal in such a way that the ~~Miller~~ indices of the crystalline plane defined by the surface 3a, hereinafter called the contact plane, of this second substrate are (100). In addition, each of the female-type second positioning means 5 consists of at least one mortice, at least one bearing surface 5a of which is perpendicular to the plane of contact 3a of the second substrate 3 and makes an angle of +/- 45 DEG with the longitudinal axis X-X of the second substrate. In addition, the Miller indices of the crystalline plane defined by the bearing surface 5a of the second positioning means are (010).

In view of the above, it is clear that embodiments of the "mortice and tenon" elements are not limited to those shown hereinabove. In general, the positioning means consist of at least one tenon, for example in the form of a half-cylinder, including at least one planar or convex bearing surface, combined with a mortice including at least one planar or convex bearing surface. <IMAGE>